

Aug. 13, 1929.

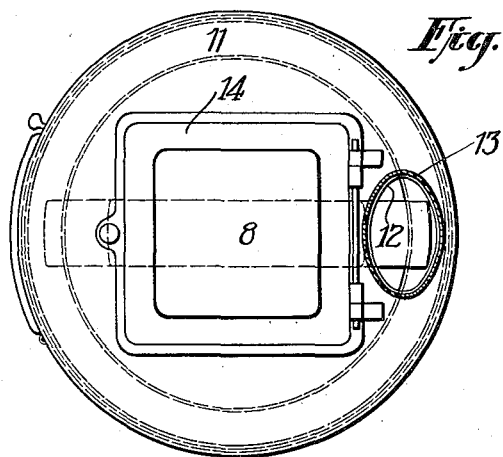
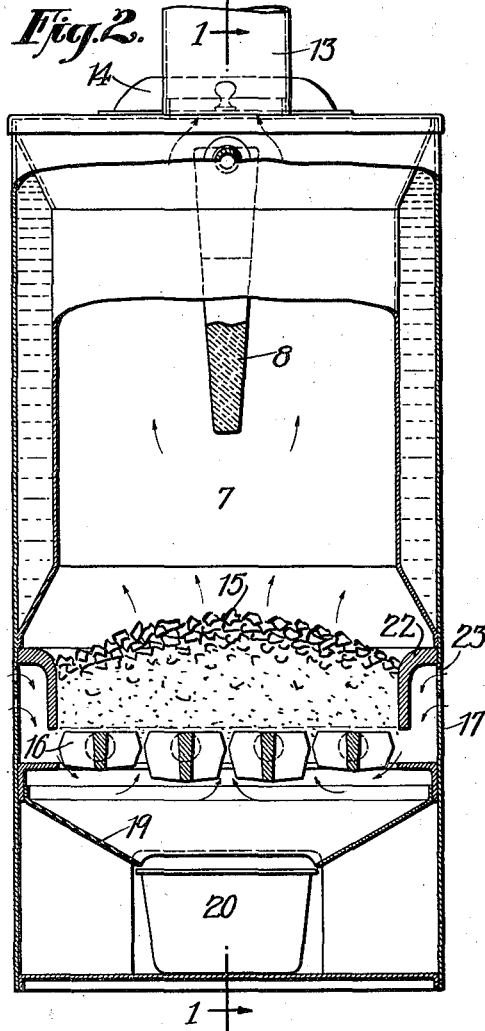
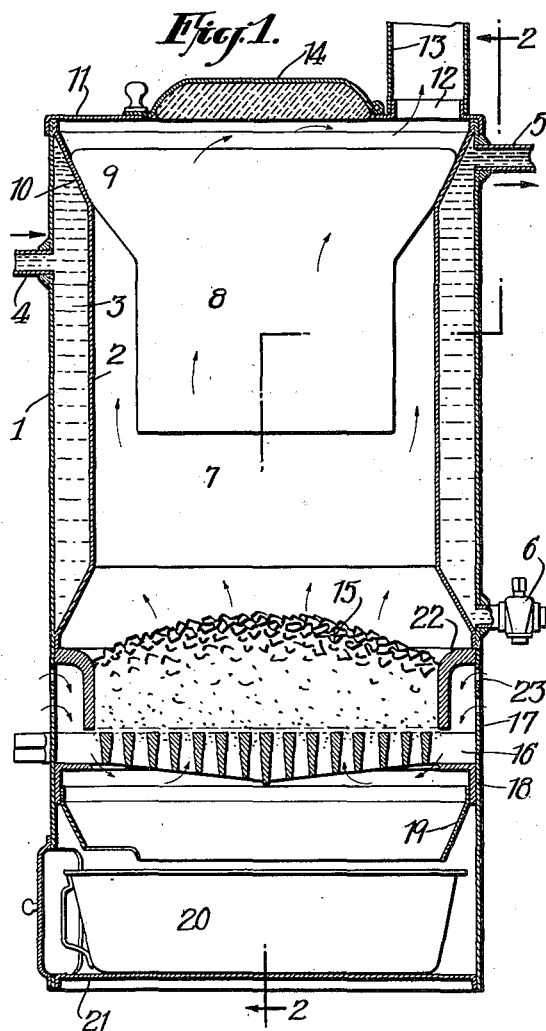
T. E. MURRAY ET AL

1,724,505

BOILER OR HEATER

Filed March 19, 1924

2 Sheets-Sheet 1



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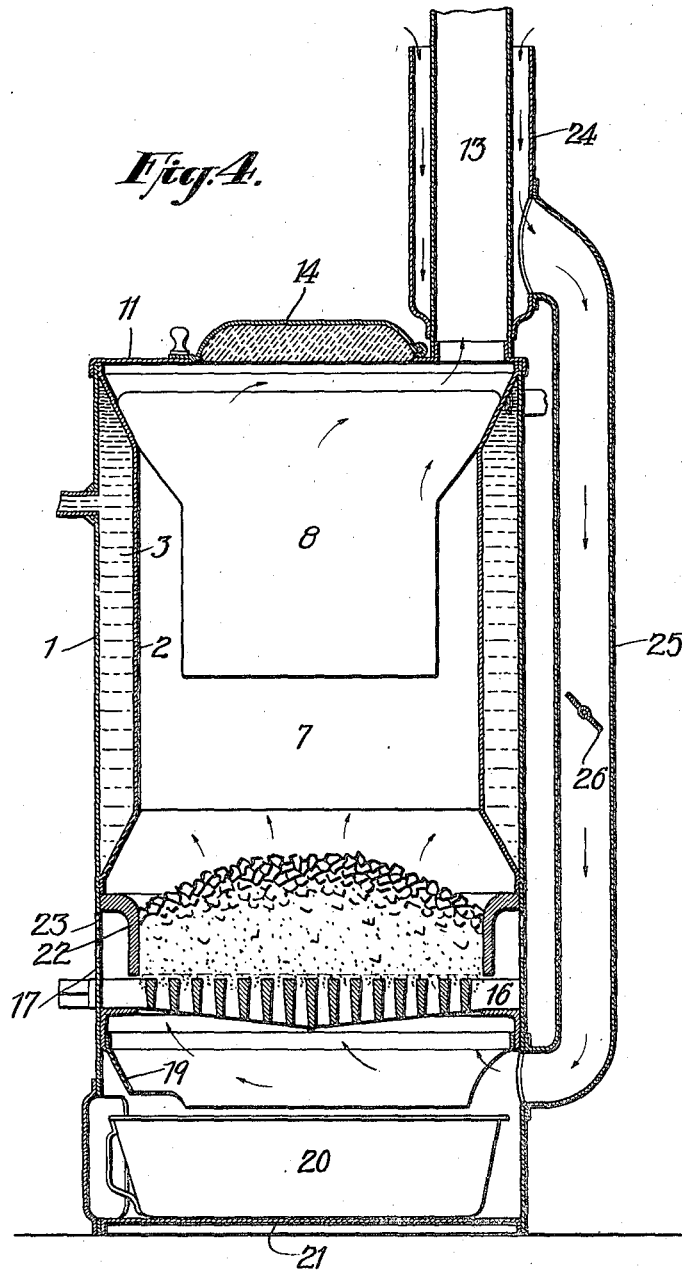
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# UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF BROOKLYN, AND JOHN H. LAWRENCE, OF NEW YORK, N. Y.;  
SAID LAWRENCE ASSIGNOR OF HIS ENTIRE RIGHT TO SAID MURRAY.

## BOILER OR HEATER.

Application filed March 19, 1924. Serial No. 700,215.

Our invention aims to provide improvements in the direction of cheapness and efficiency in boilers, water heaters and heaters generally. The accompanying drawings illustrate embodiments of the invention.

Fig. 1 is a vertical section on a plane from front to back of a heater;

Fig. 2 is a partial section and a partial elevation of the same from the rear;

Fig. 3 is a plan of the same;

Fig. 4 is a section similar to Fig. 1, illustrating a modification.

Referring to the embodiments of the invention illustrated, the wall or outer shell 1 of the heater is a length of comparatively thin pipe, such as can be made by bending a thin sheet of metal and joining the edges by welding or otherwise. An inner wall 2 is made of a similar pipe of smaller diameter with flared ends which are welded to the outer shell 1. This forms a water jacket or space 3 which is supplied with water from a pipe 4 and overflows or passes out through a pipe 5. A drainage pipe with a cock 6 serves for emptying the water space. The water may be circulated from the pipe 5 through radiators and back to the inlet pipe 4.

Located within the chamber 7 formed by the inner shell 2 is a radiant body 8 adapted to become highly heated and to radiate its heat directly against the inner wall 2. It may be of various materials, such as for example fire clay. It is supported by means of inclined shoulders 9 at its upper ends resting upon the flared upper portion 10 of the inner wall 3. It is of long narrow shape in plan and slightly wedge-shaped in vertical section, and the lower portion of it has the edges well spaced away from the wall 3 so as to offer no hindrance to the dropping of coal past it. It may, however, be of various shapes and materials according to the design and intended use of the heater. Such a radiant body becomes highly heated and has a considerable surface from which the heat is radiated to the side walls with much greater efficiency than if the walls were exposed only to the hot gases from the fire.

The top 11 is of sheet metal flanged to fit over the side wall, with an opening surrounded by a flange 12 to receive the smoke pipe 13. It is provided also with a central opening covered by a hinged door 14 lined with fire brick or similar refractory mate-

rial, for introducing coal. By opening this door also access is had to the radiant body and it is loosely supported so that it may be adjusted to the best position. When the radiant body requires to be replaced by a new one, the top 11 may be lifted off for the purpose.

The apparatus is shown with a coal burner, though various other means may be used for supplying heat. The body of coal 15 rests on rocking grate bars 16. The outer wall 1 has a downward extension 17 within which is mounted a flanged ring 18 supporting the grate bars, from which depends a conical chute or guide 19 which directs the cinders and ashes into a pan 20 removable through a side door. The side wall and the parts 18 and 19 may be welded together or riveted. The lower end of the wall is closed by a flanged sheet metal bottom 21.

To facilitate combustion we preferably provide a ring 22 of fire brick or iron or other suitable material which surrounds the coal bed and is spaced away from the side wall, forming an annular chamber to which air is admitted through openings 23 in the outer wall and from which it passes under and through the coal bed. The wall 22 becomes heated by its contact with the burning coal and in turn heats the air supply. At the same time this protects the outer sheet metal wall from overheating, which would happen if it were in direct contact with the coal.

In Fig. 4 we have illustrated an additional means of preheating the air. Surrounding the lower part of the smoke pipe 13 is an air pipe 24 open at the top and communicating by a pipe 25, containing a damper 26, with the space below the grate. Otherwise the design is the same as in Fig. 1. The ring 22 surrounding the fire bed is retained for protection of the wall 17 and may also be provided with openings 23 for admission of air.

The heater may be used as a boiler, that is for converting the water in the space 3 into steam, by properly proportioning the parts and regulating the feed. Or it may be used for merely heating the water as described, or for heating air or other fluid passing through the space 3.

Though we have described with great particularity of detail certain embodiments of our invention yet it is not to be understood

therefrom that the invention is restricted to the particular embodiments disclosed. Various other modifications may be made in the structure of the heater, the radiant body and the burner and in the arrangement of the parts without departing from the invention as defined in the following claims.

What we claim is:—

1. A heater comprising two tubular parts one within and spaced from the other to form an annular vessel, a combustion chamber within the inner one of said tubular parts and an opening at the top of said combustion chamber, a cover plate extending over said parts and a radiant body suspended from the top of said parts and extending into said combustion chamber and adapted to be lifted out of the heater when said cover plate is removed, and a grate in the bottom of said combustion chamber, said radiant body being shaped to permit the pas-

sage of fuel past it to said grate when the cover plate is removed.

2. A heater comprising two tubular parts one within and spaced from the other to form an annular vessel, and a combustion chamber within the inner one of said tubular parts, a grate in the lower part of said combustion chamber, a cover plate extending over said parts and a radiant body suspended from the top of said parts and extending into said combustion chamber and adapted to be lifted out of the heater when said cover plate is removed, a ring surrounding the space immediately above the grate and spaced away from the side wall, forming a chamber to which air is admitted and heated with an outlet above the grate.

In witness whereof, we have hereunto signed our names.

THOMAS E. MURRAY.  
JOHN H. LAWRENCE.